Coastal Impact Assistance Program Application

Houma Navigation Canal Lock
May 22, 2006

Project Title - Houma Navigational Canal Lock

Nominating Agencies – This project is a joint nomination from the following agencies:

Terrebonne Levee and Conservation District

Terrebonne Parish Consolidated Government

The project is supported by the following entities via the attached resolutions of support:

Terrebonne Cons. Waterworks District No. 1
Lafourche Waterworks Dist. No. 1
South Lafourche Levee District
Bayou Lafourche Fresh Water District
Terrebonne Parish Coastal Zone Advisory Board

Terrebonne Port Commission
Lafourche Parish Government
North Lafourche Levee District
Houma Terrebonne Chamber of Commerce

Point of Contact:

The point of contact for this project is:

Mr. Jerome Zeringue, Executive Director
Terrebonne Levee and Conservation District
220 Clendenning Road
Houma, La. 70361

jzee@tlcd.org

Total CIAP Funds Requested:

As outlined in the guidance for the application process as dictated by DNR, as well as the preliminary guidance issued by the Minerals Management Service, the nominating agencies have worked to find other cost sharing funding sources for the HNC Lock. The nominating agencies have identified four other sources that are available and applicable to the lock project. They are as follows:

Terrebonne Parish CIAP Funding	$ 10	Million	6 %
State CIAP Funding	100		55
Local Sales Tax Dollars	20		11
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Total	**180**		**100 %**

The ongoing design and environmental impact analysis of the lock complex, described below, has been funded by a combination of the local sales tax, state capital outlay, and federal appropriations. With the addition of the CIAP funding, the project can be constructed.

Infrastructure Funds Requested:

$ 0

The Houma Navigation Canal Lock will provide both environmental and flood control benefits. The lock complex, including the large floodgate, will be operated for an average of 90 days each fall to prevent salt water intrusion. This time period is clearly identifiable on the attached enclosures. Enclosure 1 depicts the number of days over the past 60 years that the salt content in the water (as measured at the Houma Water Treatment Plant) has exceeded 250 mg/l. This is the standard used by the Consolidated Water District in Houma to decide when the Houma Navigation Canal/Intracoastal Waterway are too salty to use for potable water. Enclosure 2 depicts the mean number of days that this standard is exceeded in a given year, distributed over the various months of the year. This data demonstrates that salt water intrusion occurs primarily during September, October, and November, on average. This information was also the basis for the calculation of salt water reduction benefits in the Final Feasibility Study and Environmental Impact Statement for the Morganza to the Gulf Project (2002).

It will also be operated for an equal amount of time in the spring during periods of high Atchafalaya River flow to encourage freshwater diversion. Based on historical flows, the high flows usually occur in the months of March, April, and May. These high river stages usually exist for approximately 90 days.

By comparison, the lock complex will most likely be operated only for a few days per year (20 on average) for storm surge prevention. This number is based on the average days of closure over the last 4 years at the existing Bayou Terrebonne and Bayou Little Caillou Floodgates. Even on those days, the lock complex will provide significant salt water intrusion benefits as well.

Based on these operational criteria, the lock will be operated approximately 90% of the time (180 days out of 200 total days) in an average year for environmental benefits, primarily marsh conservation and preservation. Using this rational, any funds dedicated for the lock should be considered non-infrastructure in nature.

This characterization may seem contradictory since the lock complex is a large project both in size and cost; however, every coastal restoration/preservation project from the smallest to the largest, consists of physical improvements (water control structures, levees, pumps, etc) that would be considered infrastructure in another setting. A water control structure can be used for wetland preservation as well as infrastructure improvements in the right setting. The Houma Navigation Canal setting, and the resulting onshore OCS impacts, merely requires a larger solution than other locations.

Description/Location of Project

The Houma Navigation Canal Lock would be located in Dulac, Louisiana, near the confluence of the Houma Navigation Canal and Bayou Grand Caillou. Enclosure 3 and 4 are a vicinity map and project sketch. The lock complex will consist of a 200' Wide flood gate, a 110' wide by 800' long lock chamber, and the associated necessary improvements to the site, all built in a realigned channel just west of the existing Houma Navigation Canal. The project also includes a closure dam across the existing channel once the new structure and channel are built. The new lock and floodgate will be built primarily on an existing maintenance dredging spoil disposal area on the west bank of the existing channel. The project will be built in this method to allow for continued, uninterrupted navigation in support of OCS activities through the channel during construction.

The 200' wide floodgate is designed to allow for continued use of the channel by the offshore fabrication industry located in Houma, 20 miles to the north. It allows for use of the channel by structures up to 250' wide through innovative design techniques.

The lock chamber is a key component of the complex because it will allow for continued use of the waterway during periods of salt water intrusion and fresh water management. During those periods, the flood gate will be closed, and smaller navigation will be routed through the lock chamber. Also during those periods, but much less frequently, the larger flood gate will have to be opened for a short period of time to allow for passage of the larger structures. These passages will usually only require a 12 hour opening of the large floodgate.

Project Type

The project fits the characteristics of several project types as outlined in the CIAP legislation, but most accurately fits category (1), conservation, restoration and protection of coastal areas, including wetlands. As described above, the lock will be operated for approximately 90% of the time to manage salt water intrusion and fresh water distribution. Operation in this manner will conserve and protect vast amounts of

wetlands within the Terrebonne Basin. The remaining operational time will be for storm surge protection, which also provides significant salt water prevention benefits.

Project Justification

The project justification will be provided in a format corresponding to the evaluation criteria as outlined on the DNR CIAP application guidance.

1) Is the project free of issues that may impact timely implementation of the project?

This project can be implemented (begin construction) by December 2007. There are no projects of a similar size and scope that can be implemented in such a short time frame. This project can be implemented in this time frame because it has been the subject of a detailed engineering and environmental planning process for the last six years. The lock complex has been in design since 2000, with a 50% design deliverable recently submitted and reviewed. The design costs to date total $8 Million, with and additional $2 Million needed to complete the design. URS, Corp., as the design firm on the project, will complete final design by December, 2007.

Concurrent with the design process, the Corps of Engineers (COE) is performing an Environmental Impact Statement on the lock complex at a cost of approximately $100,000 (to date). This EIS is in process, and will include an analysis of the immediate and secondary environmental impacts and benefits of the lock complex, including affects on freshwater flows both near and detached from the structure.

The design and EIS are supported by both a numerical and physical model, at a cost of $ 1 Million (to date). The numerical model, referred to as the system wide model, will analyze freshwater distribution throughout the Terrebonne Basin. The physical model will help identify design issues, freshwater flows, and navigation concerns.

Notably, both the design and the EIS have been conducted in a collaborative fashion, with input from the following agencies and interested parties:

La. DNR	TLCD
La. DOTD	US EPA
US ACE	US FWS
NMFS	La. DWF
La. DEQ	Terr. Parish School Board

The result of this process is a project that has been, and will continue to be, fully analyzed and critiqued from multiple perspectives. This is the only major coastal project that has been subject to this level of review and analysis, and is ready to be implemented. As a result, the issues that may affect implementation of the project have been identified,

In the LCA Study, the Houma Navigation Canal Lock is one of the ten short term projects. This study effort also included many of the same parties involved in the Coast 2050 effort. In both studies, the Houma Navigation Canal Lock is identified as the most important project in the Terrebonne Basin and the project which could have the greatest systemic effects in that basin.

The lock complex also meets the goals and objectives of Action Plans EM-1 (Hydrologic Restoration), EM-2 (Freshwater and Sediment Diversion) and EM-7 (Marsh Management) of the Barataria-Terrebonne National Estuary Program (BTNEP).

In summary, the construction of the Houma Navigation Canal Lock has been recommended in 3 separate comprehensive reports on the most important restoration measures for the Terrebonne Basin.

In addition, the Houma Navigation Canal Lock can be used to improve the operation of other proposed coastal restoration projects. The Lake Boudreaux Freshwater Introduction Project and the Grand Bayou Freshwater Introduction Project are CWPPRA projects which rely on freshwater distribution out of the Houma Navigation Canal and the Gulf Intracoastal Waterway, respectively. Both projects have been approved based on using the currently available freshwater resources in those waterways. When the Houma Navigation Canal Lock is operated for freshwater distribution, it should encourage more flows into those areas, thereby increasing the effectiveness of those projects. Additionally, the Falgout Canal Marsh Management Project should have greater effectiveness when the Houma Navigation Canal Lock is used to reduce saltwater intrusion.

3) Does the proposed project protect health, safety, or infrastructure of national, state, regional or local significance?

This proposed project protects many types of infrastructure of extreme importance. The project will protect the economic vitality of Lafourche and Terrebonne Parishes by protecting the freshwater drinking resources of both communities. The Houma Navigation Canal is the primary conduit for saltwater intrusion in the Terrebonne Basin. It affects the main water plant in Houma. The water plant in Houma provides the majority of the drinking water for Terrebonne Parish. It is routinely affected by saltwater intrusion every fall (Enclosure 1 & 2).

The Lafourche Waterworks District No. 1 in Lockport is also negatively affected by saltwater intrusion. The saltwater travels down the Intracoastal Waterway to the Company Canal and up the Company Canal to Lockport. This plant produces the water for the majority of central and southern Lafourche Parish, including Port Fourchon. These waterways provide the potable water for over 200,000 persons in the heart of the oil and gas industry in south central Louisiana. When drought conditions exist, as they have earlier this year, our citizens literally taste coastal erosion in their drinking water. This drinking water benefit was valued at $193,000 per year over the 50 year project life,

The saltwater intrusion benefits were calculated in the Morganza to the Gulf Hurricane Protection Project Study. The benefits to the potable water supply in Terrebonne and Lafourche Parishes was outlined in preceding paragraphs. The habitat benefits of preventing salt water intrusion were analyzed in an April, 1997, report by the COE. In that study, it was calculated that the lock complex would benefit approximately 188,000 acres of habitat over the project life, primarily by reducing salinities.

The benefits of managing the freshwater resources of the area are currently being analyzed in the system wide model. This model is being run by the Corps of Engineers at the request of the state and federal resource agencies associated with the Morganza to the Gulf Study. As described earlier, the purpose of this model is to determine the changes to the distribution of freshwater resources throughout Terrebonne Parish by building and operating the Houma Navigation Canal Lock. This model has been constructed and the model runs will be completed this summer.

The system wide model will be used in conjunction with a physical model of the lock complex. This physical model has been constructed by the Corps of Engineers in Vicksburg. This model will also be used to insure, among other things, that navigation will not be negatively affected by the lock.

As discussed above, this feature is currently the object of a 6 year, $8 Million design effort, and a 2 year, $1 million physical and numerical model effort. This project has been analyzed to a greater extent than any other project on the coast of Louisiana, and the benefits associated with it are as certain as any project could be.

6) Does the proposed project address an area of critical conservation/ restoration need or a high loss area?

The project addresses an area of critical conservation or restoration need in a very high loss area of Louisiana. The Terrebonne Basin has historically been one of the highest loss areas in central Louisiana, averaging 10 square miles per year in loss over the last 40 years. At the same time, the Terrebonne Basin, particularly the east side of the Terrebonne Basin, has had very few options for significantly restoring wetlands. This project is the only project that can provide **systemic** benefits in the near term. This is the reason why this project was a part of the Coast 2050, BTNEP, and LCA efforts. It has been clearly recognized as the lynch pin of the restoration of the Terrebonne Basin.

7) How sustainable are the benefits of the proposed project?

The benefits of this project are sustainable for 50 years. The design life of the Houma Navigation Canal Lock is 50 years. The Houma Navigation Canal Lock is also unique in that there is an existing, fully funded local sponsor with the capability of operating and maintaining the lock. The TLCD has already committed, in association with the La.DOTD, to be the local sponsor for the Morganza to the Gulf Hurricane

Protection Project, including the lock. The local sponsor has the primary responsibility within that project for operation and maintenance of the project features, including the lock complex. The TLCD has the capability and the funding stream, in association with the La.DOTD, to operate and maintain this feature for its design life. There are very few other similarly situated coastal protection projects in the State of Louisiana.

Project Cost Share

As outlined in the guidance for the application process as dictated by DNR, as well as the preliminary guidance issued by the Minerals Management Service, the nominating agencies have worked to find other cost sharing funding sources for the HNC Lock. The nominating agencies have identified four other sources that are available and applicable to the lock project. They are as follows:

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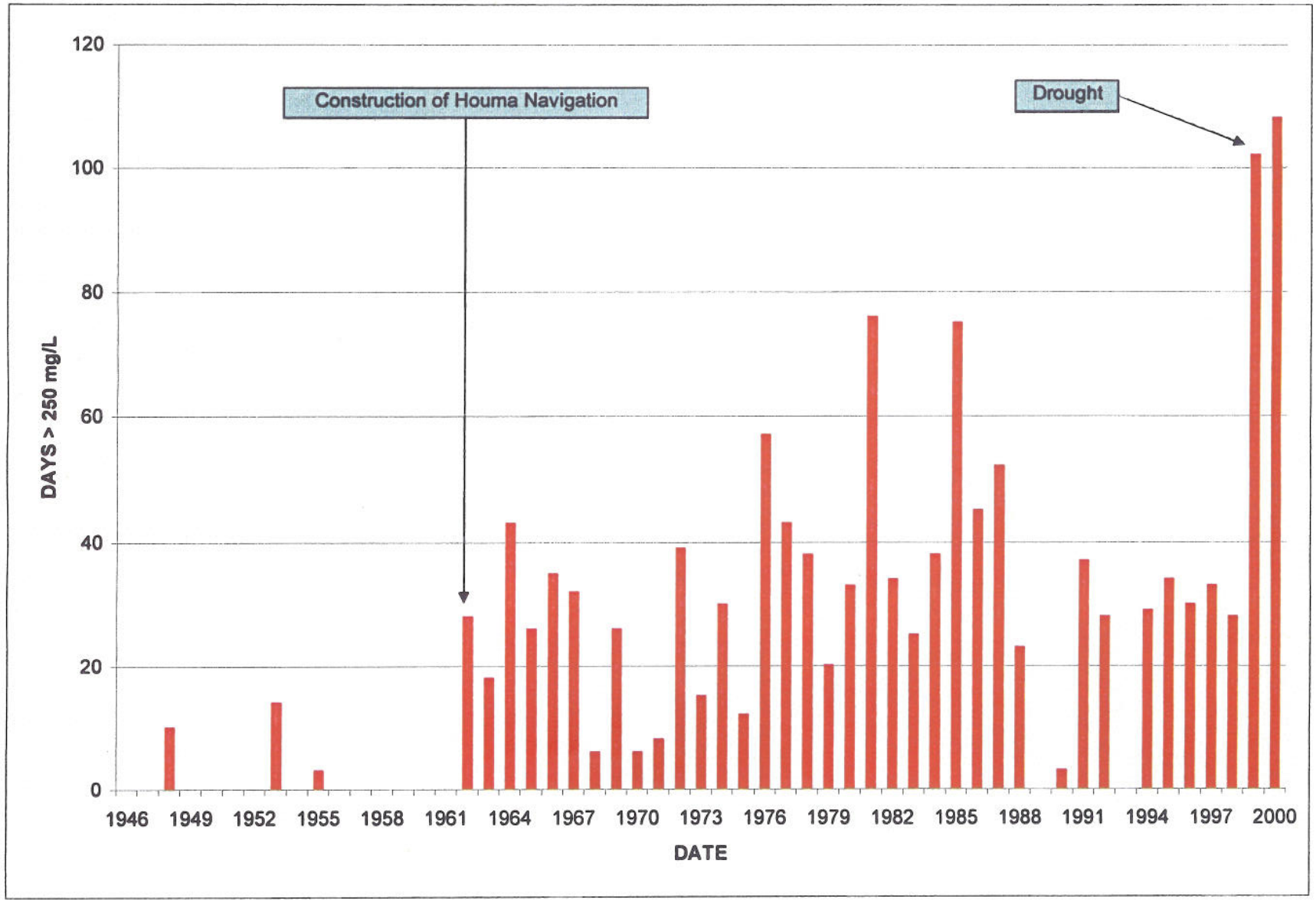


Figure 9. Days per year that chlorides measured > 250 mg/L at the Houma Water Treatment Plant on the Intracoastal Canal near its confluence with the Houma Navigation Canal.

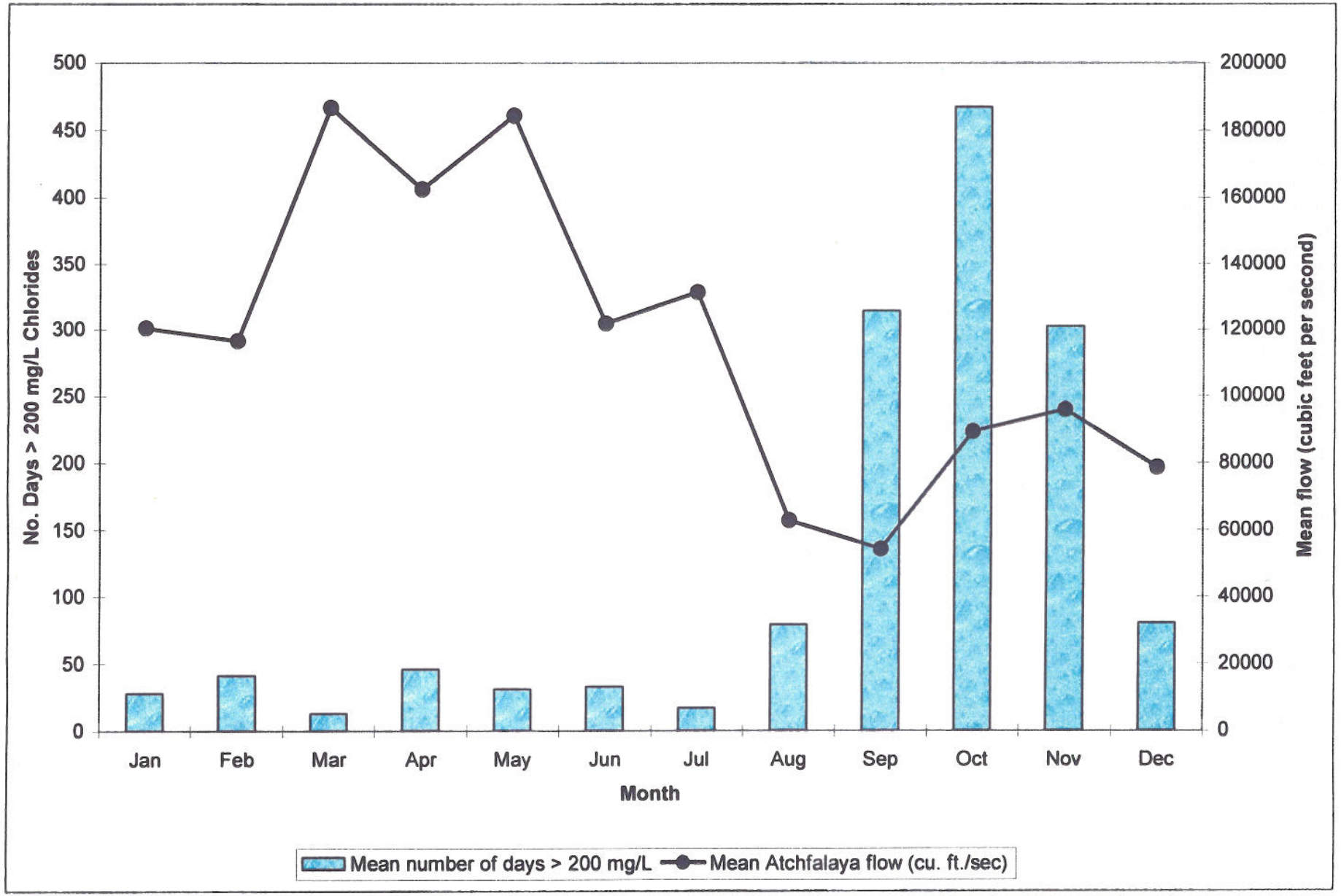
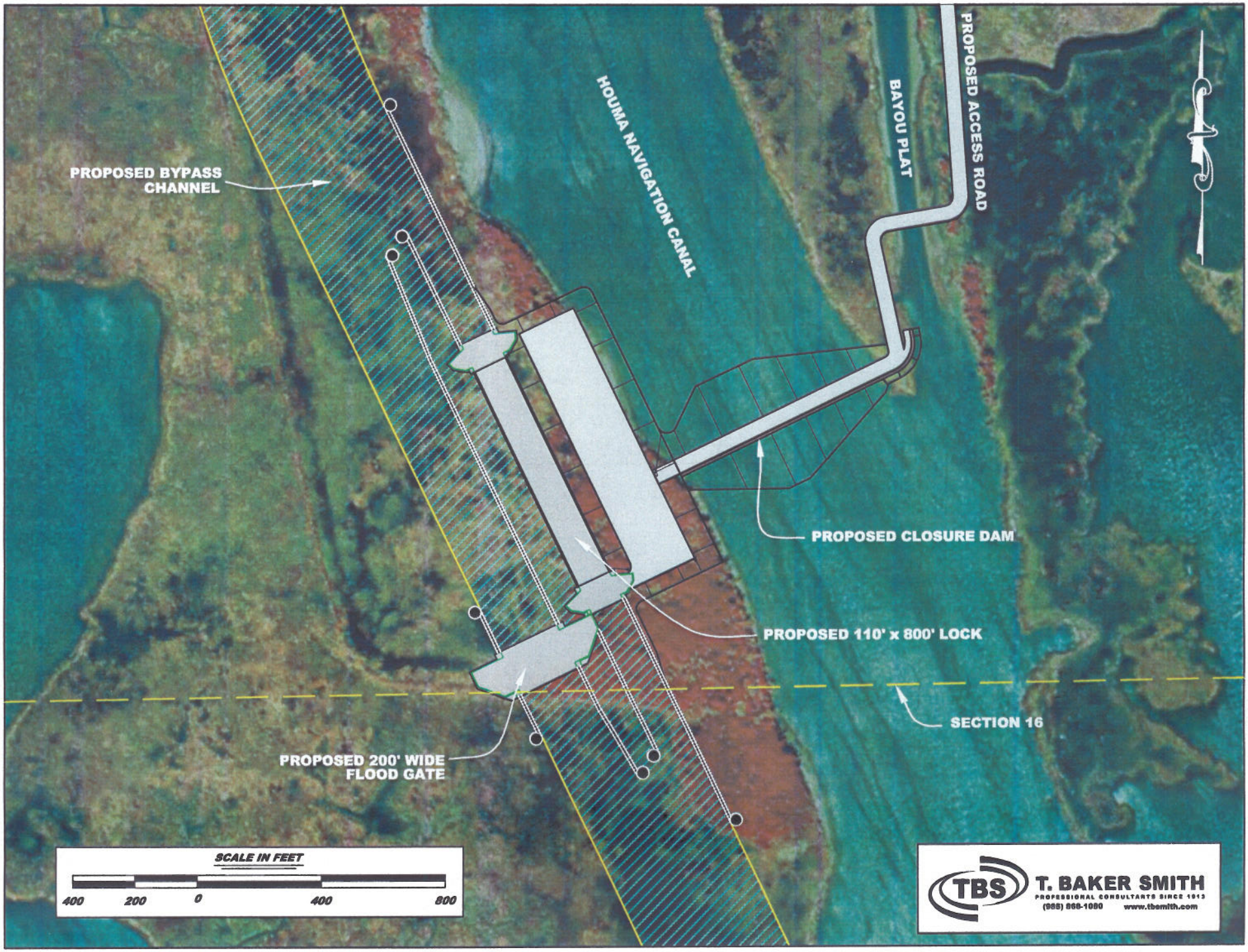


Figure 10. Mean monthly days at the Houma Water Treatment Plant with chlorides > 200 mg/L compared to mean monthly flow of Atchafalaya River at Morgan City.


PROPOSED BYPASS CHANNEL
HOUMA NAVIGATION CANAL
BAYOU PLAT
PROPOSED ACCESS ROAD
PROPOSED CLOSURE DAM
PROPOSED 110' x 800' LOCK
SECTION 16
PROPOSED 200' WIDE FLOOD GATE
SCALE IN FEET
400 200 0 400 800
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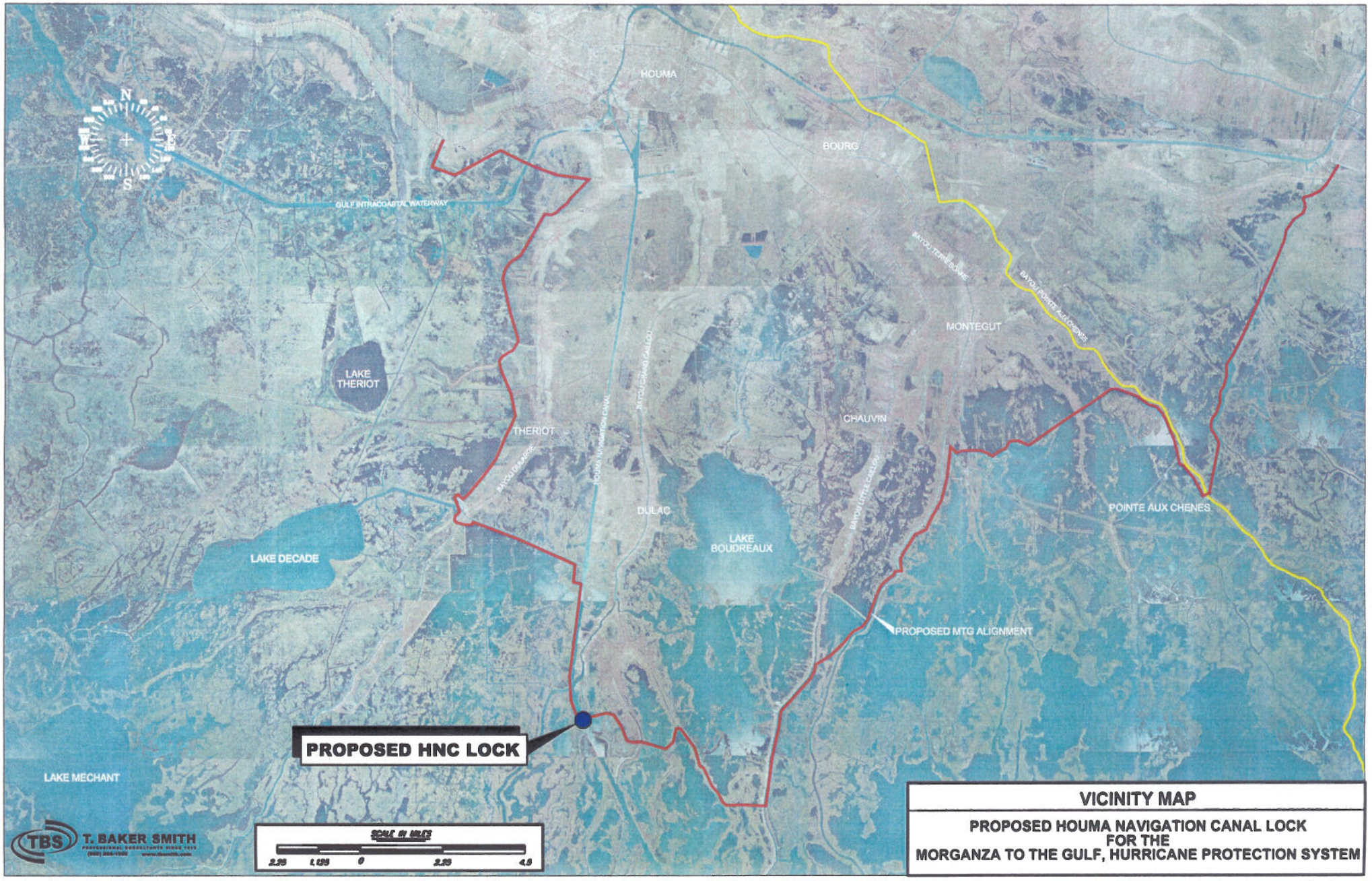
HOUMA
BOURG
GULF INTRACOASTAL WATERWAY
MONTEGUT
LAKE THERIOT
THERIOT
CHAUVIN
DULAC
LAKE BOUDREAUX
POINTE AUX CHENES
LAKE DECADE
PROPOSED MTG ALIGNMENT
PROPOSED HNC LOCK
LAKE MECHANT
T. BAKER SMITH
SCALE IN MILES
2.25 1.125 0 2.25 4.5
VICINITY MAP
PROPOSED HOUMA NAVIGATION CANAL LOCK
FOR THE
MORGANZA TO THE GULF, HURRICANE PROTECTION SYSTEM